Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
LightSquared Subsidiary LLC Request for	)	SAT-MOD-20101118-00239
Modification of Its Authority for an Ancillary	)	IB Docket 11-109
Terrestrial Component	)	

COMMENTS REGARDING THE LIGHTSQUARED TECHNICAL WORKING GROUP REPORT

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COMMENTS REGARDING THE LIGHTSQUARED TECHNICAL WORKING GROUP REPORT

New America Foundation, Free Press, Public Knowledge and Media Access Project (collectively, "Public Interest Organizations") hereby file these comments in response to the Commission's request for comments regarding the final report of the technical working group ("TWG") co-chaired by LightSquared Subsidiary LLC ("LightSquared") and the United States Global Positioning System Industry Council ("USGIC") in response to a condition in the International Bureau's *Order and Authorization* ("O&A")[1] approving the application by LightSquared to modify its current authorization to offer an integrated MSS/terrestrial service.[2] The Public Interest Organizations believe it is incumbent upon the Commission to actively intervene to broker or, if necessary, impose a plan that will not leave the L Band fallow, that will permit LightSquared to deploy its promised wholesale-only mobile broadband network, and that will safeguard essential GPS services, while calling on both parties to share the costs of a long-term transition.

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1 *In the Matter of LightSquared LLC Request for Modification of its Authority for an Ancillary Terrestrial Component*, Order and Authorization, 26 FCC Rcd 566, 588, ¶ 48 (rel. Jan. 26, 2011) ("O&A").

2 *See* Application of LightSquared for Modification of its MSS ATC Authority, SAT-MOD-20101118-00239, at 1 (filed Nov.18, 2010) ("November 18th Letter").

SUMMARY

The Public Interest Organizations urge the Commission to actively intervene to broker, or impose if necessary, a plan that will not leave the L Band fallow, that will permit LightSquared to deploy its promised wholesale-only mobile broadband network, and that will safeguard essential GPS services. The role of the Commission must be hands-on, and it must insist that both parties work cooperatively through a Commission-defined process to develop both a short- and long-term resolution that fulfills the National Broadband Plan's recommendation that L Band spectrum be available for mobile broadband services. Specifically, the Commission should seek to mitigate GPS interference through the establishment of receiver standards and an equitable division of costs of mutual accommodation that address the incentives for incumbents to degrade the utility of adjacent spectrum bands. In addition, the Public Interest Organizations ask the Commission to support the coexistence of GPS and LTE services by refraining from reversing LightSquared's integrated service waiver. In support of its request, the Public Interest Organizations point to the compelling public interest benefits of injecting into the mobile broadband market a competition-spurring wholesale carrier entrant into an increasingly uncompetitive market.

I. INTRODUCTION

As the Public Interest Organizations stated in comments supporting the requested ATC modification, "LightSquared's application serves as an important step in the process of facilitating the deployment of a new, wholesale-only mobile broadband service, and therefore can deliver significant public interest benefits by increasing competition in a largely broken wireless market, consistent with this Commission's goal of stimulating innovation, investment,

and competition in the wireless industry."[3] We noted the compelling public interest benefits that would flow from a new mobile broadband entrant, particularly one offering a wholesale network that can extend the reach of the smaller, rural and regional mobile carriers, as well as access to connectivity for a wide range of innovative new devices, applications, services and retail providers at the network's edge. We noted in a subsequent filing in opposition to GPS industry applications for review that "[g]reater competition and investment will drive higher quality, lower-priced mobile broadband services, increasing the access to such services for a greater number of citizens, and opening the door to greater innovation at the edges of the network."[4]

The Public Interest Organizations supported the International Bureau's waiver and that Order's specific condition requiring a collaborative and expedited technical working group process.[5] It now appears that the TWG's interference testing produced extremely useful data. Unfortunately, it also now appears that the commercial GPS industry abandoned collaboration in favor of an uncompromising stance that would deny the public of LTE deployment on the L Band altogether. The Public Interest Organizations dispute the notion that LTE deployment on the L Band and the continued viability of GPS must be a zero sum game. It is only a zero sum game if the Commission will allow the commercial GPS industry's unsupportable, staunch opposition to all such deployment to be outcome-determinative.

As LightSquared itself acknowledges, the TWG's report's "overall conclusion is that transmissions in the 10 MHz at the top of LightSquared's downlink frequencies – the band

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[3] Comments of Free Press, Media Access Project, New America Foundation and Public Knowledge, *In the Matter of LightSquared LLC Request for Modification of its Authority for an Ancillary Terrestrial Component*, Order and Authorization, SAT-MOD-20101118-00239 (Dec. 9, 2010).

[4] Consolidated Opposition to Applications for Review and Petition for Reconsideration, Public Interest Organizations, *In the Matter of LightSquared LLC Request for Modification of its Authority for an Ancillary Terrestrial Component*, SAT-MOD-20101118-00239 (Mar. 14, 2011), at 7.

[5] *Id.* at 11-12. *See also* O&A ¶ 41.

nearest to the GPS frequencies – will adversely affect the performance of a significant number of legacy GPS receivers."[6] To its credit, even prior to the filing of the working group report, LightSquared's response to the impending report was to propose an alternative plan to operate its terrestrial base stations at much lower power and, initially, only on the lowest 10 MHz of the L Band (1526-1536 MHz) that is separated from the bottom of the GPS band by 23 MHz.[7] Although the TWG report appears inconclusive concerning the viability of LightSquared's alternative proposal for all seven categories of GPS devices, the commercial GPS device industry now maintains that LightSquared should not be permitted to deploy its terrestrial broadband network on any portion of the L Band, now or ever, and should find alternative spectrum. Having squatted on the L Band, the GPS industry effectively proposes that the Band lie fallow and become a sort of super guard band for the benefit solely of the GPS industry.

The Public Interest Organizations urge the Commission to move ahead with a determination that, if feasible, the two services and their respective public interest benefits can co-exist. GPS is a critical service. Regardless of whether the GPS industry should have invested in receivers capable of filtering out L Band transmissions that are allowed under the Commission's 2005 ATC Reconsideration Order[8], we recognize that the Commission will need

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[6] Recommendation of LightSquared Subsidiary LLC (June 30, 2011), at 1. LightSquared's recommendation is available through the FCC's Electronic Comment Filing System in IB Docket No. 11-109.

[7] As the Commission noted in its Notice, LightSquared "indicates its willingness to: (1) operate at lower power than permitted by its existing FCC authorization; (2) agree to a 'standstill' in the terrestrial use of its Upper 10 MHz frequencies immediately adjacent to the GPS band; and (3) commence terrestrial commercial operations only on the lower 10 MHz portion of its spectrum and to coordinate and share the cost of underwriting a workable solution for the small number of legacy precision measurement devices that may be at risk." FCC, Comment Deadlines Established Regarding the LightSquared Technical Working Group Report, IB Docket No. 11-109 (June 30, 2011).

[8] *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2GHz Band, the L-Band, and the 1.6/2.4 GHz Band*, Memorandum Opinion and Order and

to protect most GPS uses from harmful interference for some considerable period of time. Nevertheless, if the Commission reverses itself on the availability of the L Band for LightSquared's proposed wholesale LTE network, it will deny the public compelling benefits from enhanced mobile wireless competition, choice and innovation, and will also waste valuable spectrum. Moreover, allowing the GPS industry's choices concerning investment in receiver filtering to preclude the assigned use of another licensee's neighboring band will set yet another dangerous precedent regarding the Commission's inability, short of explicit receiver regulation, to prevent incumbent licensees from degrading or even effectively appropriating the value of adjacent spectrum, thereby preventing significant bands from being put to high-value uses in the public interest.

The public interest can only be safeguarded if the Commission plays a hands-on role in determining if and how these two important services can coexist, as well as how to equitably distribute the short- and long-term costs of mutual accommodation. Determining whether LightSquared's alternative proposal, or some other solution, is feasible will no doubt require additional testing, and ultimately one or both sets of parties may resist any resolution. Nevertheless we urge the Commission to insist that the parties work cooperatively through a Commission-determined process and timeline toward, if possible, a short- and long-term resolution that fulfills the National Broadband Plan's recommendation that L Band spectrum be available for mobile broadband services.

Second Order on Reconsideration, IB Docket No. 01-185, FCC 05-30 (rel. Feb. 25, 2005) ("*2005 ATC Reconsideration Order"*).

II. THE COMMISSION MUST SEEK TO MITIGATE GPS INTERFERENCE WITHOUT SETTING A PRECEDENT THAT ENCOURAGES INCUMBENTS TO DEGRADE THE UTILITY OF ADJACENT SPECTRUM BANDS.

The Public Interest Organizations find the zero- sum position of the GPS industry troubling not only because of the potential loss of tens of billions of dollars in consumer welfare likely to result from a new nationwide and wholesale LTE mobile broadband competitor, but also because it would reinforce yet again the social costs of the Commission's failure to promulgate receiver regulations that take into account the incentive that incumbents have to cut corners and costs, even when so doing imposes negative externalities on adjacent bands. In the absence of explicit receiver regulations, the Commission must not allow spectrum incumbents to reduce their own costs by failing to design around the known rights and potential, lawful uses of neighboring spectrum bands.

Indeed, this has been the Commission's explicit policy with respect to the L Band since at least 2005[9] – a policy the Commission reiterated in its April MSS Band *Report & Order*. The 2005 *ATC Reconsideration Order* acknowledged modifications in the agreement among the GPS Industry Council, NTIA and LightSquared's predecessor on OOBE limits governing ATC mobile broadband base stations.[10] The Order also addressed the responsibility of the GPS industry and other incumbent users of neighboring bands to anticipate the high-power ancillary terrestrial service being authorized:

> Generally, we do not regulate the susceptibility of receivers to interference from transmissions on nearby frequencies. Rather, we rely on the marketplace —

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9 *Id*. ¶ 56.

10 *See* U.S. GPS Council, Petition for Reconsideration, Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2GHz Band, the L-Band, and the 1.6/2.4 GHz Band, IB Docket No. 01-185 (filed Jun. 11, 2003) at 2-3 ("The proposed MSV/GPS Industry Council OOBE limits elicited broad support from both the public and private sectors. The [NTIA] endorsed these OOBE limits as 'attainable by the MSS ATC and agreeable with the GPS community.'").

> manufacturers and service providers — to decide how much susceptibility to interference will be acceptable to consumers. In addition, ***we generally do not limit one party's ability to use the spectrum based on another party's choice regarding receiver susceptibility***.[11]

Just months ago in the MSS Band *Report & Order*, the Commission reiterated both its 2005 policy and the fact that the GPS industry had been on notice for at least eight years that in the future its receivers would need to anticipate high-power terrestrial base stations:

> We emphasize that responsibility for protecting services rests not only on new entrants but also on incumbent users themselves, who must use receivers that reasonably discriminate against reception of signals outside their allocated spectrum. ***In the case of GPS, we note that extensive terrestrial operations have been anticipated in the L-band for at least 8 years***.[12]

Unfortunately, "rely[ing] on the marketplace" simply cannot work unless the Commission begins enforcing its policies against incumbents.

The technical working group report appears consistent with LightSquared's contention that the harmful interference to GPS devices and services is caused not by its base stations exceeding the transmit power or out-of-band emission ("OOBE") limits established by the Commission – and agreed to by the GPS industry and NTIA – in the 2003 and 2005 ATC Orders noted just above. The harmful interference verified by the TWG's extensive testing results from the inability of GPS receivers to reject signals transmitted by LightSquared on its own frequency assignment at power levels compliant with the 2005 ATC Order, a lack of effective filtering that causes receiver overload (or desensitization). Although the GPS industry now claims that the proposed scale of LightSquared's planned deployment could not have been anticipated, as the Public Internet Organizations noted last March when opposing the industry's Applications for

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[11] *2005 ATC Reconsideration Order* ¶ 56 (emphasis added).

[12] *Report and Order*, In the Matter of Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142 (rel. April 6, 2011) ¶ 28 (emphasis added).

Review, this claim is belied by the GPS Industry Council's September 2003 Reply to Comments on its own Petition for Reconsideration of the Commission's initial ATC Order.[13]

In its recent MSS *Report and Order*, the Commission stated that while it is, "of course, committed to preventing harmful interference to GPS . . . we will look closely at additional measures that may be required to achieve efficient use of the spectrum, including the possibility of establishing receiver standards relative to the ability to reject interference from signals outside their allocated spectrum." Accordingly, as the Commission structures the longer-term transition away from GPS device dependence on a largely fallow L Band, and decides how to equitably distribute the costs of compliance with its rules, it should at a minimum follow through on its observation that the time has come for receiver standards that ensure one licensee cannot shift its costs onto other licensees – and, by extension, onto consumers and the economy – by generating negative externalities on neighboring bands. In any event, the Commission can hardly accomplish its broadband expansion mandate if it effectively rewards incumbents that do not even attempt to mitigate potential harmful interference with modest investments in more robust receiver technology. The Commission should discourage such behavior particularly when, as here, the GPS industry bases its business model on its ability to ride free on an infrastructure of

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[13] The U.S. GPS Industry Council stated that under the ATC integrated service rules there would be "increased user density from potentially millions of MSS mobile terminals operating in ATC mode" which "will transmit back to potentially tens of thousands of ATC wireless base stations in the 1525-1559 MHz bands . . .," and together "significantly increase the noise floor in the bracketed GPS L1 band from ATC transmissions into the GPS L1 signal from *both sides*." U.S. GPS Council, Reply to Comments, *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2GHz Band, the L-Band, and the 1.6/2.4 GHz Band*, IB Docket No. 01-185 (filed Sept. 4, 2003) at 2.

30 GPS satellites paid for and maintained by the taxpaying public, on public spectrum, a combined public subsidy that one recent study valued at $18 billion.[14]

III. THE COMMISSION'S EFFORTS TO FIND A POLICY PATH FOR THE TWO SERVICES TO COEXIST MUST CONSIDER THE COMPELLING FUTURE BENEFITS OF A WHOLESALE LTE ENTRANT AND NOT JUST THE SHORT-TERM COSTS TO THE GPS INDUSTRY.

The intensity of the Commission's effort to find a solution that will allow these two services – GPS and a wholesale LTE network – to coexist should not focus primarily on the costs of interference avoidance to the GPS industry. Rather, that effort must balance the compelling public interest benefits that would be lost if LightSquared is unable to enter and change the dynamic in the increasingly uncompetitive mobile broadband network by deploying a wholesale LTE network. Although the GPS industry has put the FCC in an unenviable position, it is critical that the Commission use all of its authority to adopt a resolution that addresses not only the short-term vulnerability of commercial GPS device makers and users, but also the longer-term public interest benefits of a policy path that permits the two services to coexist.

A. Reversing LightSquared's Integrated Service Waiver is Contrary to the Commission's Policy Agenda to Promote Spectrum Access and Mobile Broadband Connectivity.

The Public Interest Organizations described in a filing in this docket last December the many reasons why the public interest benefits associated with the LightSquared business plan and buildout, including conditions the Commission itself placed on the license transfer and integrated service waiver, are central to the Commission's overall broadband policy goals.[15]

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[14] Coleman Bazelon, the Brattle Group, *GPS Interference: Implicit Subsidy to the GPS Industry and Cost to LightSquared of Accommodation* (Jun. 22, 2011) at 5-10, *available at* http://www.brattle.com/_documents/UploadLibrary/Upload957.pdf.

[15] Comments of Free Press, Media Access Project, New America Foundation and Public Knowledge, *In the Matter of LightSquared LLC Request for Modification of its Authority for an Ancillary Terrestrial Component*, Order and Authorization, SAT-MOD-20101118-00239 (Dec. 9, 2010) at 2-5.

Rather than repeat the entire litany here, we note that the repurposing of the MSS spectrum for high-capacity mobile broadband accounts for one-third of all non-federal spectrum (90 of 270 MHz) identified in the National Broadband Plan as the most promising option to address what FCC Chairman Genachowski has called a "spectrum crunch" constraining America's "invisible infrastructure" for "economic growth and job creation."[16] The L Band represents 40 MHz of the total non-federal spectrum that the Commission anticipated would be made available for advanced wireless services.

B. A Wholesale Mobile Broadband Market Entrant is Likely to Serve as a Platform for Competition and Innovation.

The Public Interest Organizations, other consumer advocates, and even the non-dominant commercial wireless carriers have long decried the eroding competition in a market trending steadily toward duopoly.[17] Fundamental problems with competition in wireless have restricted innovation and investment and led to unnecessarily higher prices and lower service quality. This Commission has at least implicitly acknowledged this trend by refusing in 2010 and in 2011 to find that there is effective competition in the industry in its annual reports on wireless broadband competition.[18] Many of the barriers to competition faced by smaller and regional carriers –

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[16] *Connecting America: The National Broadband Plan*, at 84 (March 2010); Julius Genachowski, "Unleashing America's Invisible Infrastructure," Federal Communications Commission (Oct. 21, 2010), *available at* http://reboot.fcc.gov/blog?entryId=904238.

[17] *See, e.g.*, Comments of Consumer Federation of America, Consumers Union, Free Press, Media Access Project, New America Foundation, and Public Knowledge, WT Docket No. 09-66 (filed June 15, 2009); Reply Comments of Rural Cellular Association, *In the Matter of LightSquared Subsidiary LLC Request for Modification of its Authority for an Ancillary Terrestrial Component*, SAT-MOD-20101118-00239 (filed Dec. 9, 2010) ("Rural Cellular Association Reply Comments"); Chris Riley, "The Myth of the Competitive Wireless Market," Free Press (Nov. 17, 2009), *available at* http://www.freepress.net/node/74580.

[18] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Fifteenth Report, WT Docket No. 10-133, FCC 11-103 (Rel. Jun. 27, 2011); Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of*

including data roaming on a near-nationwide basis at reasonable rates and terms – could be addressed at least in part by a 100 percent wholesale network that has no anti-competitive interest in handset exclusivity, in the locking and blocking of devices, or in thwarting interoperability with competing providers on its LTE frequencies. Accordingly, the Rural Cellular Association has strongly supported LightSquared's application for a waiver permitting its wholesale customers to provide service to terrestrial-only devices, stating that "LightSquared's proposed wholesale service, deployed according to aggressive milestones established by the Commission, promises to provide RCA members with affordable access to a nationwide, robust 4G LTE network."[19] RCA notes that LightSquared's network may be the only compatible way for the customers of rural carriers to gain affordable access to nationwide broadband data coverage.[20]

An open wholesale-only network also will provide LightSquared with an incentive to provide bandwidth as a commodity to every imaginable retailer, application provider, device maker or other innovator without any conflict of interest concerning competition with its own offerings. The most immediate and obvious beneficiaries may be companies, such as big-box retailers and consumer device manufacturers, that would prefer to sell their products directly to the consumer, with mobile connectivity included, rather than to negotiate deals with major carriers that require subscriptions and a disproportionate share of the profit. The non-discriminatory wholesaling of bandwidth on an as-needed basis both to upstarts and well-established firms in adjacent markets (devices, applications, services) promises to enable an ecosystem of third-party software, hardware and application developers that could more quickly

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1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, Fourteenth Report, 25 FCC Rcd 11407 (2010).

[19] Rural Cellular Association Reply Comments at 1.

[20] *Id*. at 4.

and affordably integrate wireless into the products and services of other industries, from electric utilities and transportation, to education, health care, media and entertainment.

Part of this potential for enhanced wireless innovation is the increasing trend toward using wireless connectivity to network and monitor virtually anything. Although most of the talk about exploding mobile data demand focuses on mobile video and other personal applications, wireless machine-to-machine communication – such as energy monitoring, environmental monitoring and controls, mobile health care monitoring, industrial automation – also is growing at an accelerated pace as costs decline. Ericsson has estimated there will be 50 billion connected devices by 2020, leading increasingly to what some already call an "Internet of Things."[21] While we expect that Wi-Fi and other unlicensed connectivity is best suited to meet the lion's share of this demand, there also will be a growing demand for connectivity that is ubiquitous and/or guarantees a higher quality of service than today's low-power, localized unlicensed can offer. Once again, the potential for market-leading innovation, consumer welfare and job creation will be enhanced by an open wholesale network designed expressly to accommodate this innovation – and to promote competition to hold down prices among any other carriers that offer similar services – competition and choice that will be lost if the U.S. wireless market becomes an effective duopoly.

IV. CONCLUSION

The Public Interest Organizations believe it is incumbent upon the Commission to actively intervene to broker, or impose if necessary, a plan that will not leave the L Band fallow, that will permit LightSquared to deploy its promised wholesale-only mobile broadband network, and that will safeguard essential GPS services. It is critical that the Commission play a hands-on

[21] Hans Vestberg, President and CEO, Ericsson, Address to Shareholders, April 13, 2010, *available at* http://www.ericsson.com/thecompany/press/releases/2010/04/1403231.

role in determining if and how these two important services can coexist, as well as how to equitably distribute the short- and long-term costs of mutual accommodation. We urge the Commission to insist that the parties work cooperatively through an FCC-determined process and timeline to determine, if possible, a short- and long-term resolution that fulfills the National Broadband Plan's recommendation that L Band spectrum be available for mobile broadband services. The public interest benefits of a wholesale carrier in the increasingly uncompetitive mobile broadband marketplace are too compelling to forfeit when technical and/or policy paths are available to sustain both services.

Respectfully Submitted,

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